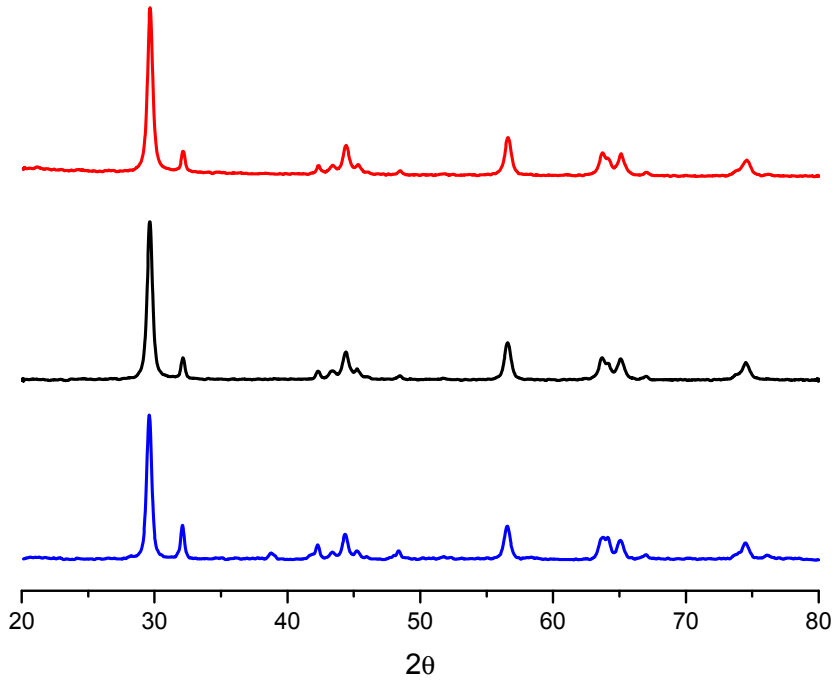
Electronic Supplementary Material (ESI) for Nanoscale


Fenoglio I. et al. Singlet oxygen plays a key role in the toxicity and DNA damage of nanometric $TiO_2$ to human keratinocytes

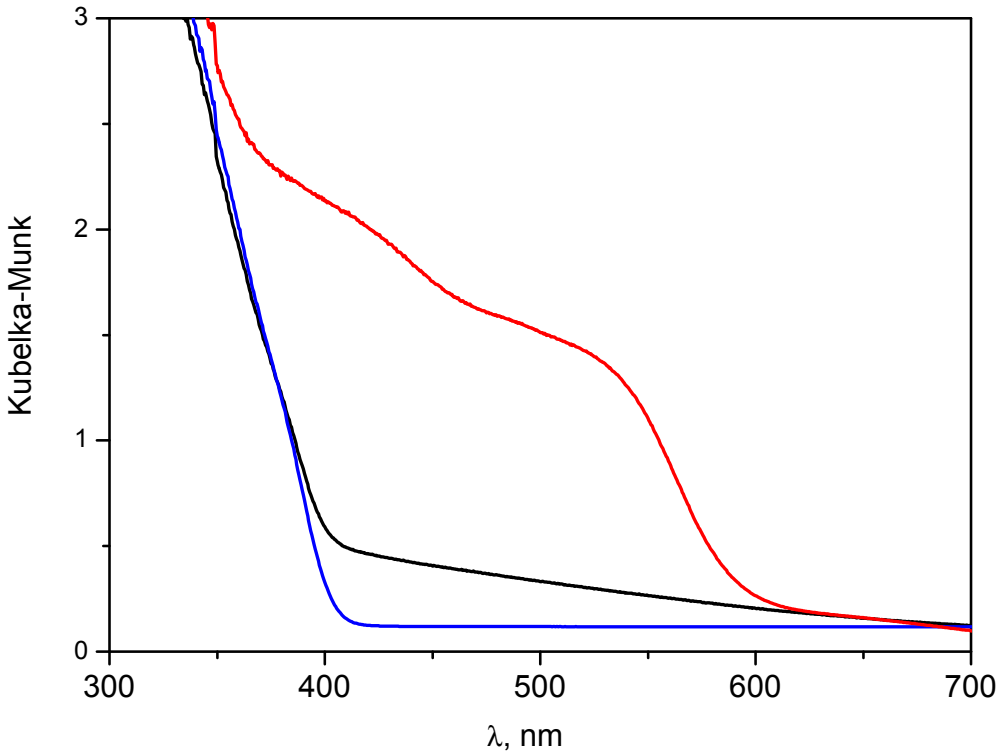
# Supporting Information

**Crystalline phase (XRD)**



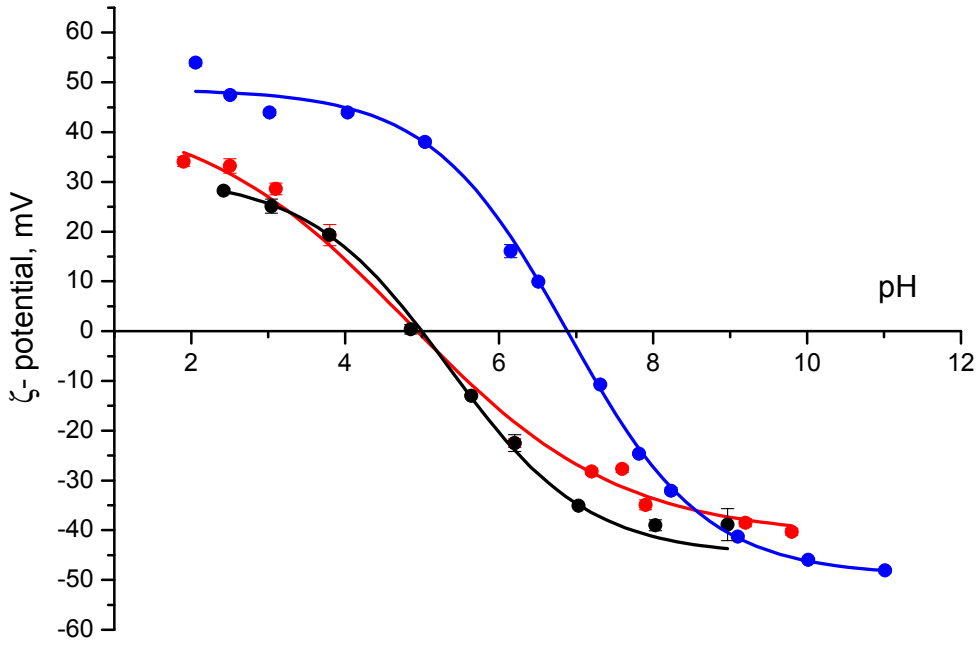

XRD diffraction patterns of pristine and modified $TiO_2$. $T_{A/R}$ (blue), $T_{A/R}$-C (black), $T_{A/R}$-Fe (red).

## 2. UV-Vis shielding capacity




Diffuse reflectance (DR) UV-Vis spectra (processed by using the Kubelka–Munk function). $T_{A/R}$ (blue), $T_{A/R}$-C (black), $T_{A/R}$-Fe (red).

### 3. ζ potential



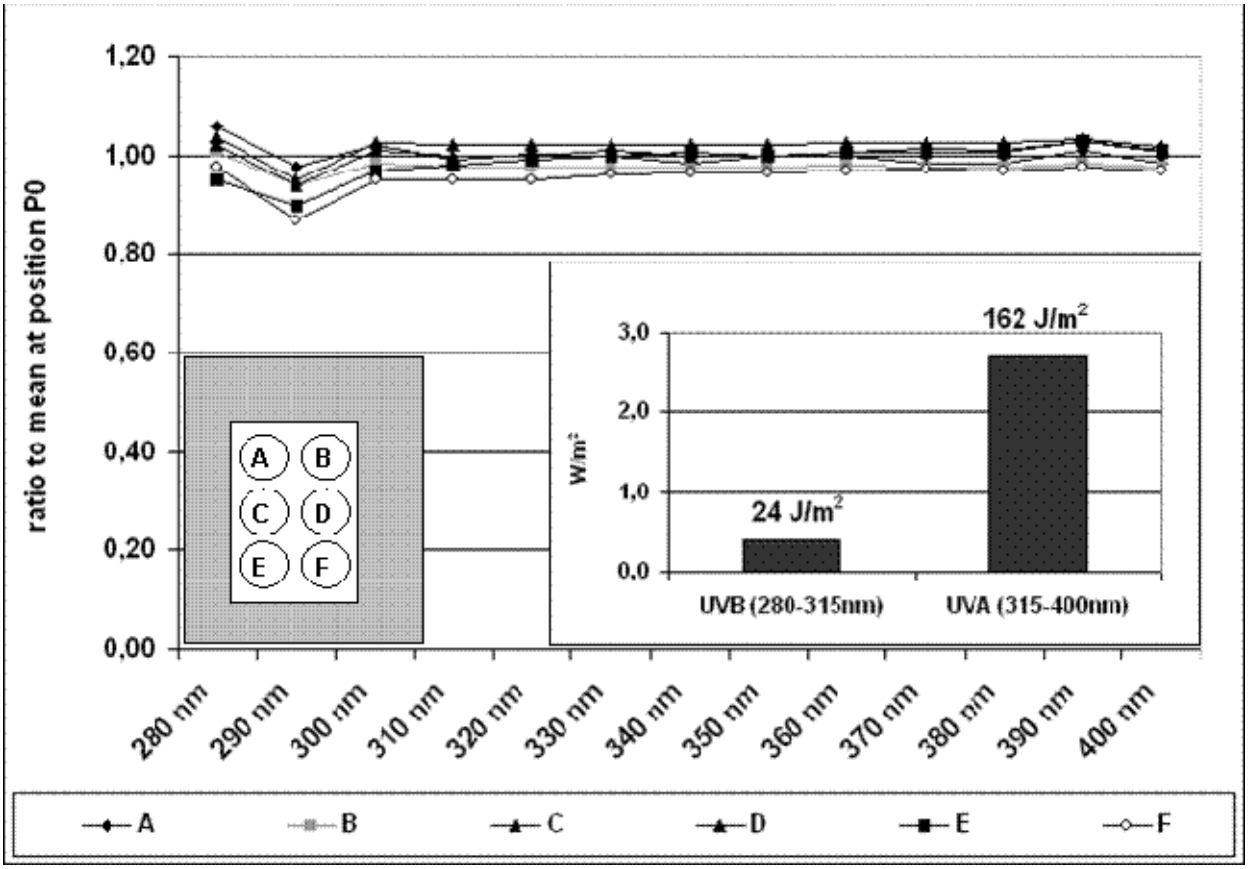

ζ potential as a function of pH for $T_{A/R}$ (blue), $T_{A/R}$–C (black) and $T_{A/R}$–Fe (dark red) recorded in water.

## 4. Particle size

| Sample | Conditions | Water | | Serum free cell media | | Cell media | |
|---|---|---|---|---|---|---|---|
| | | mean diameter (nm) | PDI | mean diameter (nm) | PDI | mean diameter (nm) | PDI |
| $T_{A/R}$ | 0 min | 89 | 1.60 | 245 | 2.12 | 178 | 3.5 |
| | 15 min light | 119 | 1.64 | 471 | 1.68 | 343 | 2.79 |
| | 2h dark | 104 | 2.13 | 310 | 2.04 | 184 | 3.03 |
| $T_{A/R}$-Fe | 0 min | 108 | 1.70 | 252 | 6.50 | 247 | 1.52 |
| | 15 min light | 130 | 1.52 | 747 | 10.03 | 320 | 2.02 |
| | 2h dark | 105 | 1.40 | 320 | 3.35 | 190 | 1.61 |
| $T_{A/R}$-C | 0 min | 92 | 3.44 | 192 | 2.05 | 250 | 4.25 |
| | 15 min light | 121 | 2.44 | 491 | 2.09 | 361 | 3.48 |
| | 2h dark | 79.5 | 2.56 | 250 | 3.60 | 248 | 5.52 |

Size and polydispersity index of the particles evaluated by centrifugal sedimentation (CS).

## 5. UVA/B irradiation system in cellular experiments




UV radiation measurements demonstrating the homogeneity over all positions of the 6 well plates at a well defined distance from the Ultralux lamp. Adapted from Sacco et al. 2010.